

Notice of Allowability	Application No.	Applicant(s)	
	10/015,811	GRAETTINGER ET AL.	
	Examiner	Art Unit	
	Shouxiang Hu	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the 06-2204 interview.
2. ☒ The allowed claim(s) is/are 84-89.
3. ☒ The drawings filed on 02 November 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

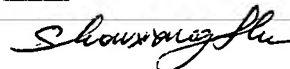
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20040622</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |



**SHOUXIANG HU
PRIMARY EXAMINER**

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John M. Grover (RN: 42,610) on June 22, 2004.

The application has been amended as follows:

IN THE CLAIMS

Claims 1 - 77. **(Canceled).**

Claims 78 - 83. **(Canceled).**

Claim 84. **(Currently Amended)** A method of electrically connecting a capacitor having a high dielectric constant dielectric to a transistor active area, the method comprising:

forming a first barrier against corrosion covering sidewalls of a contact hole, wherein the first barrier comprises insulating material;

forming a second barrier against corrosion covering inner sidewalls of the first barrier, wherein the second barrier comprises a conductive material; and

forming a conductive contact plug which electrically connects the capacitor including a high dielectric constant dielectric to the transistor active area of a lower circuit element, wherein the second barrier is around the conductive

contact plug and the first barrier is around the second barrier, thereby forming an electrical contact including at least two protective barriers around the conductive contact plug to avoid corrosive aspects associated with the fabrication of the capacitor, and wherein the first barrier is inside the contact hole.

Claim 85. **(Previously Amended)** The method of Claim 84, further comprising forming a third barrier against corrosion covering a side of the conductive contact plug opposite the transistor active area, wherein the third barrier comprises a conductive material and electrically connects the capacitor with the contact conductive contact plug.

Claim 86. **(Previously Amended)** The method of Claim 84, further comprising forming a third barrier against corrosion covering a side of the conductive contact plug nearest the transistor active area, wherein the third barrier comprises a conductive material and electrically connects the transistor active area with the contact conductive contact plug.

Claim 87. **(Previously Amended)** The method of Claim 84, further comprising:

forming a third barrier against corrosion covering a side of the conductive contact plug opposite the transistor active area, wherein the third barrier comprises a conductive material and electrically connects the capacitor with the contact conductive contact plug; and

forming a fourth barrier against corrosion covering a side of the conductive contact plug nearest the transistor active area, wherein the fourth barrier comprises a conductive material and electrically connects the transistor active area with the contact conductive contact plug.

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Claim 88. **(Previously Amended)** The method of Claim 84, further comprising forming an insulating layer including a sidewall portion and a cap portion covering at least one of a bit line or a word line on the lower circuit element.

Claim 89. **(Previously Presented)** The method of Claim 88, wherein portions of the at least one of a bit line or a word line contact the first barrier.

Allowable Subject Matter

Claims 84-89 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
June 22, 2004



SHOUXIANG HU
PRIMARY EXAMINER